AMENDMENTS AND REMARKS

CLAIM AMENDMENTS

Claims 1 and 13 have been amended to remove a Markush group from the description of feature (a). The language originally stated:

"*a non-polymeric hydrocarbyl substituted dicarbonyl derivative selected from the group consisting of an acid, an ester, a salt, an anhydride, ester-acid, acid-salt and mixtures thereof*"

The language now specifies:

"*a non-polymeric hydrocarbyl substituted dicarbonyl derivative of an acid, an ester, a salt, an anhydride, ester-acid, acid-salt or mixtures thereof*".

The term "and" has been deleted and replaced with the term "or" to ensure the claims have the appropriate consistency. These amendments are supported by claims 1 and 13 as filed and pages 2-3 of the specification.

Claim 18 is new. Claim 18 is supported by claims 1 and 16 as well as pages 2-3 and page 9, line 3 to page 10, line 9 of the specification.

No other claim amendments have been made in this response.

REMARKS

The Examiner has rejected claims 1, 5, 10, 12, 13, 16 and 17 under 35 U.S.C. 112, because the Examiner has indicated that independent claims 1 and 13 recite two Markush groups for the same component. In view of the amendments described above, the claim rejections are overcome because there is now only one Markush group listed. The amendments to claims 1 and 13 also overcome the 35 U.S.C. 112 rejections to all the dependent claims. The Examiner is respectfully requested to withdraw the rejections to claims 1, 5, 10, 12, 13, 16 and 17.

The Examiner has not rejected the present claims under 35 U.S.C. 102. Accordingly, it is submitted that the present claims are considered novel.

The Examiner has rejected claims 1, 5, 13, 14, 16 and 17 under 35 U.S.C. 103(a) over Olson (US 5,308,514) in view of Smith Jr. (US 4,966,722).

The Examiner contends that Olson discloses a grease composition comprising overbased calcium sulfonate containing solid particles of colloidally dispersed calcium carbonate in the form of calcite. The Examiner further indicates that the grease composition of Olson contains lubricating oil and a salt forming acid. The salt forming acid is disclosed in column 4, lines 20-28, and column 5, lines 20-26. Column 4, lines 20-26 specifically discloses succinic acid.

Applicants submit that Olson describes an overbased calcium sulfonate grease composition that may be prepared by techniques known in the art (see column 4, lines 4 to 6 of Olson). Reference in column 4, lines 20 to 28 of Olson is made to succinic acid as a suitable salt forming (complex forming) acid. However, succinic acid is disclosed in a long list of named additives. None of the acids named in column 4, lines 20 to 28 contain a hydrocarbyl substituent group on the acid. Furthermore, Olson discloses in column 4, lines 26 to 28 preference towards using boric acid and boric acid formers.

In contrast the present invention has purposely selected the acid producing compound of the presently claimed grease composition. The presently claimed acid producing compound is not in the same class of materials as boric acid. Hence Applicants have purposely selected a class of acid, e.g., succinic acid, and then further selected a subset, where the acid producing compound is hydrocarbyl substituted. Accordingly, the present invention differs from Olson, in that Olson does not make the purposeful selection of a hydrocarbyl substituted acid producing compound, and secondly because Olson provides only a long list of salt forming acids and then preferentially selects boric acid.

Applicants have unexpectedly discovered that the acid producing compounds of the claimed grease compositions have improved water spray-off performance compared to the acids named in Olson at column 4, lines 20 to 26. The unexpected performance is demonstrated in the enclosed declaration by inventor Sivik. The data demonstrates that adding the hydrocarbyl substituted succinic acid provides reduced grease water spray-off compared with a comparative example that replaces the hydrocarbyl substituted succinic acid with non-substituted succinic acid. The water spray-off is reported as 14.1 % for the inventive grease composition, and 26.4 % for the comparative example, with lower amounts of spray-off being desired. Even almost doubling the mmol of succinic acid in the comparative example only reduced the water spray-off to 22 %, still higher than the result obtained by the inventive example.

A skilled person would not have had the expectation that the presently claimed acid producing compounds would provide decreased water spray-off over and above greases containing non-substituted succinic acid. Accordingly, a skilled person would have had no expectation of improved results.

The Examiner also suggests combining Olson with Smith because Olson broadly discloses succinic acid in a grease, and Smith teaches that hydrocarbyl succinic acids are known in the art. Hence the Examiner is of the position that combining Olson and Smith produces the presently claimed invention. Applicants respectfully traverse.

Applicants submit that Smith discloses evidence to demonstrate that the lubricating compositions of Smith are directed towards lubricating oils as provided in column 22, lines 24 to 40 of the reference. The text specifies that the lubricating oil concentrates and compositions include crankcase lubricating oils for spark-ignited and compression-ignited internal combustion engines, such as automobile and truck engines, marine and railroad diesel engines, in power transmitting fluids such as automatic transmission fluids, tractor fluids, universal tractor fluids, hydraulic fluids, heavy duty hydraulic fluids, power steering fluids, gear lubricants, industrial oils and pump oils. Smith does not disclose, teach or otherwise suggest employing the oil soluble hydrocarbyl substituted succinic acid, as defined in column 19, line 60 to column 20, line 31, in a grease composition. In contrast the present invention is limited to grease compositions.

The compositions of Smith are lubricating oils and are different from greases. The Examiner is respectfully requested to review the enclosed text from common general knowledge (Kirk-Othmer). As the enclosed pages of Kirk-Othmer demonstrate a lubricating oil from petroleum is a complex mixture of hydrocarbon molecules. These generally range for low viscosity oils to more viscous lubricants (see page 484). In contrast a grease is a lubricating oil that is thickened with a gelling agent (see page 501). Accordingly, whilst greases and lubricants are known in the same general technical field, the properties of such materials are very different. Consequently, a skilled person would not be motivated to combine Olson and Smith. The Examiner is therefore respectfully requested to withdraw the 35 U.S.C. 103(a) rejections in view of Olson and Smith.

In the event that the Examiner maintains the position that a skilled person would combine Olson and Smith, the following reasoned statements apply. Smith discloses

that its lubricating compositions employ an oil soluble hydrocarbyl substituted succinic acid to reduce haze (see column 20, lines 32 to 39). The origin of the haze is described in column 1, line 66 to column 2, line 23 of Smith. Smith does not disclose, teach or otherwise suggest employing oil soluble hydrocarbyl substituted succinic acids as a means to reduce water spray-off in grease compositions .

In contrast, Applicants have unexpectedly discovered that adding the acid producing compound of the presently claimed invention to a grease composition provides improved water spray-off performance. Accordingly, it is submitted that even if a skilled person combined Olson and Smith, the improved water spray-off performance of the present invention would not have been contemplated for a grease composition based on the disclosure of Olson and Smith. As noted above, neither Olson or Smith discloses water spray-off performance. Nor do the references provide any teaching or motivation toward the grease compositions of the present invention.

Had a skilled person combined Olson and Smith, the improved water spray-off performance provided by the hydrocarbyl substituted materials, such improvement being demonstrated by the comparative data submitted in the enclosed declaration, still represents an unexpected result not taught or suggested by either reference. In fact, by teaching a preference for boric acid, Olson, whether combined with Smith or not, teaches away from the present invention. In view of the above, Applicants submit that the presently claimed invention is unobvious over Olson and Smith. Accordingly, the Examiner is respectfully requested to withdraw the rejections under 35 U.S.C. 103(a) and find all claims allowable.

With regard to claims 5, 14, 16 and 17, these claims are dependent on independent claims 1 or 13. As is submitted above, independent claims 1 and 13 are unobvious over Olson and Smith, therefore claims 5, 14, 16 and 17 are also unobvious. The Examiner is respectfully requested to withdraw the 35 U.S.C. 103(a) rejections to claims 5, 14, 16 and 17.

The Examiner has rejected claims 10 and 12 under 35 U.S.C. 103(a) over Olson (US 5,308,514) in view of Smith Jr. (US 4,966,722) and further in view of Muir (US 4,560,489) and Ney (US 5,392,525).

Claims 10 and 12 are dependent on independent claim 1. As is submitted above, independent claim 1 is unobvious over Olson and Smith, therefore claims 10 and 12 are

for the same reasons also unobvious. The Examiner is respectfully requested to withdraw the 35 U.S.C. 103(a) rejections to claims 10 and 12.

New claim 18 is believed to be novel since it is substantially similar to claim 1 when specifying the technical feature of claim 16. With regard to unobviousness, claim 18 of the present invention is unobvious over Olson and Smith for the same reasoned statements made above. Accordingly, it is submitted that new claim 18 meets the requirements of 35 U.S.C. 102 and U.S.C. 103(a). The Examiner is respectfully requested to find claim 18 patentable subject-matter.

CONCLUSION

In view of the remarks above, Applicants believe that the present invention meets all of the requirements of patentability, and requests the Examiner to find all claims allowable. The foregoing remarks are believed to be a full and complete response to the outstanding office action. If for any reason the Examiner believes that a telephone conference would expedite the prosecution of this application, I can be reached at the telephone number listed below.

The Commissioner is authorized to charge any required fees or credit any overpayment of fees to The Lubrizol Corporation Deposit Account No. 12-2275.

Respectfully submitted,

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